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Two new species of *Lyophyllum* s.l. (*Basidiomycota*, *Agaricomycetes*) from La Palma (Canary Islands, Spain)

Rose Marie Dähncke[1], Marco Contu[2] & Alfredo Vizzini[3]*

[1]*Finca 'Los Castañeros', 38710 Breña Alta - La Palma (Islas Canarias), España*
[2]*Via Marmilla, 12 (I Gioielli 2), I-07026 Olbia (OT), Italy*
[3]*Dipartimento di Biologia Vegetale - Università degli Studi di Torino Viale Mattioli 25, I-10125, Torino, Italy*
*Correspondence to: *alfredo.vizzini@unito.it*

Abstract — Two new species in the genus *Lyophyllum* collected in La Palma (Canary Islands), *L. fuscobrunneum* and *L. impudicum*, are here described and taxonomically delimited based upon morphological data. For each species detailed descriptions, microscopical drawings, and plates are provided.

Key words — *Agaricales, Lyophyllaceae,* taxonomy, biodiversity

Introduction

The present paper deals with two new species belonging to *Lyophyllum* P. Karst. emend. Kühner s.l., *L. fuscobrunneum* and *L. impudicum*, collected in La Palma, Canary Islands, by Rose Marie Dähncke. Three papers concerning *Lyophyllum* species from La Palma have been already published in the recent past by the present authors (Dähncke et al. 2009, 2010; Vizzini & Contu 2010) but it is obvious that this genus is very well represented in this island and that careful studies could easily lead to the discovery of new taxa since nobody other than RMD has conducted extensive collections and studies on it there.

Materials & methods

The macromorphological descriptions follow the detailed field notes taken for each collection on fresh material. The micromorphological descriptions are based both upon study of fresh and herbarium material. Dried material was revived in 2% KOH and stained in Congo red and Phloxine B. Cotton Blue was used to highlight the siderophilous granulation in the basidia (Baroni 1981). Spore measurements are based on means of 30 spores. The width of basidia was measured at the thickest part, and the length was

measured from the apex (sterigmata excluded) to the basal septum. We followed the taxonomic concept of Bon (1999) and Kalamees (2004) for the *Lyophyllaceae* because a natural (molecular based) classification has not yet been proposed for this group, despite the important preliminary study by Hofstetter et al. (2002). Author citations follow the IPNI Authors website and the Index Fungorum Authors of Fungal Names website. Herbarium abbreviations are according to Thiers (2010). All examined material is housed at WU (Herbarium of the Department of Plant Systematics and Evolution, Faculty of Life Sciences, Universität Wien). Latin descriptions of the new taxa are deposited in MycoBank (http://www.mycobank.org).

Taxonomy

Lyophyllum fuscobrunneum Dähncke, Contu & Vizzini, **sp. nov.** Figs. 1a, 2a–c

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Pileus 3–8 cm latus, parce carnosus, convexus, castaneo-brunneus, ad medium fusco-brunneus et obtuse lateque umbonatus, siccus, estriatus, hygrophanus, aetate pallescens. Lamellae latiusculae, subconfertae, uncinato-adnatae, cremeae deinde griseo-brunneae, nigrescentes. Stipes 4–6 × 1–1.5 cm, cylindricus, haud bulbosus, albus vel leviter brunneus, politus. Caro parce conspicua, alba, cartilaginea, nigrescens. Odor saporque farinae recentis. Sporae 5.2–6.7 × 3.7–4.5 µm, late ellipsoideae vel ellipsoideae, obtusae, leves. Basidia 30–50 × 7–9 µm, tetraspora. Cellulae marginales 20–35 × 3–7.5 µm, plerumque fusiformes vel cylindro-flexuosae. Pilei cutis ex hyphis iacentibus, radialibus vel laxe intertextis, 2–8 µm latis efformata. Fibulae numerosae.

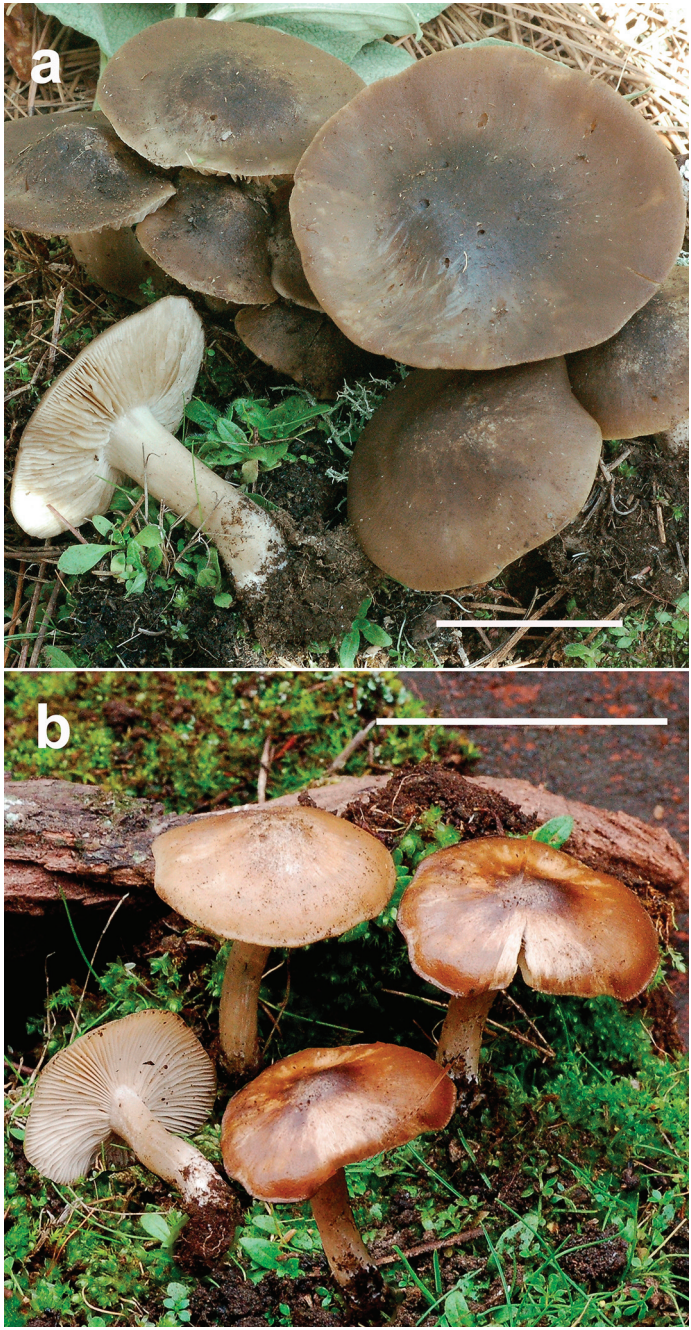
***Holotypus**: Hispania, Insulae Canariae, in insula La Palma dicta, ad locum dictum Hoyo del Rehielo, 26.XI.2009, leg. R.M. Dähncke (WU 30641).*

Etymology. The specific epithet, derived from the Latin adjectives *fuscus* (dark) and *brunneus* (brown), refers to the dark brown-pigmented pileus.

Pileus 3–8 cm wide, not very fleshy, elastic-cartilaginous, at first broadly convex with an inrolled margin, then expanding, at centre with a broad, low and obtuse umbo, dry, glabrous, chestnut-brown with a dark brown to fuscous centre, hygrophanous and fading with age, non-striate, without pruina. Lamellae moderately close, uncinate-adnate, thin, cream then greyish-brown with age, staining brown then black when bruised. Stipe 4–6 × 1–1.5 cm, cylindric-equal, without an inflated basis and lacking a bulb, polished, white, stuffed with a thick white pith. Context thick in the disk but progressively thinning towards the pileus margin, white, staining black; smell and taste mealy. Spore print white.

Spores 5.2–6.7 × 3.7–4.5 µm, on average 6.25 × 4.22 µm, hyaline, cyanophilous, carminophilous, broadly ellipsoid to ellipsoid, smooth, with a single, central, ellipsoid oil-drop, apex obtuse (Fig. 2a). Basidia 30–50 × 7–9 µm, clavate, somewhat hygrophoroid, four-spored, with basal clamp-connection (Fig. 2b); subhymenium made up of elongate to inflated elements. Hymenophoral

Figure 1 (right). Basidiomes. a. *Lyophyllum fuscobrunneum*. b. *L. impudicum*. Scale bars = 4 cm


a
b

TRAMA regular, consisting of hyaline hyphae often turning golden brown in 2% KOH. MARGINAL CELLS (cheilocystidia) 20–35 × 3–7.5 µm, mostly fusiform to cylindro-flexuose, inconspicuous, hyaline, thin-walled (FIG. 2c). PILEIPELLIS a cutis of differentiated, repent to loosely interwoven, cylindrical, smooth hyphae, 2–8 µm wide, with dominant parietal pigment; suprapellis an ixocutis of very thin elements 2–3 µm wide; subpellis and pilei trama with progressively wider hyphae. STIPITIPELLIS a cutis of elongate hyphae. CLAMP CONNECTIONS present at all septa. THROMBOPLEROUS HYPHAE not observed.

HABITAT. Gregarious near *Cistus symphytifolius* Lam. (*Cistaceae*) in a forest dominated by *Pinus canariensis* C. Sm. (*Pinaceae*). Autumn. Thus far known only from La Palma, in the Canary Islands.

COMMENTS. Among the closest European species, *Lyophyllum bonii* Contu (Consiglio & Contu 2002) has a paler pileus with no umbo, decurrent lamellae, and larger, less elongate spores. *L. ignobile* (P. Karst.) Clémençon shows a dark brown pigmented pileus, but differs in having different, non-mealy smell and taste, more elongate and narrower spores, definitely shorter and non-hygrophoroid basidia, and encrusted pigment in the pileipellis (Clémençon 1982, 1986; Bon 1999; Consiglio & Contu 2002). The recently described *L. brunneo-ochrascens* E. Ludw. has an umbilicate pileus and larger spores ("7–9.5 × 4.5–6 µm" in the type; Ludwig 2001) whilst *L. pulvis-horrei* E. Ludw. & Koeck (Ludwig 2001), also with small, broadly ellipsoid spores, differs in having adnate to decurrent gills, a different smell, and smaller basidia. Among the extra-European species keyed out by Clémençon & Smith (1983) *L. fistulosum* Clémençon & A.H. Sm. and *L. gracile* Clémençon & A.H. Sm. have bigger spores, often longer than 8 µm, shorter basidia ("27–33" µm long), and a more farinose-rancid smell. Finally, *L. chamaeleon* Clémençon & A.H. Sm. is close to *L. fuscobrunneum* in having very elongate, "37–45 × 5–7" µm basidia and a context with a mealy smell, but its spores are longer, narrower, and very elongate ("7.1–8.8 × 3.5–4.4" µm in the type).

Lyophyllum impudicum Dähncke, Contu & Vizzini, **sp. nov.** FIGS. 1b, 2d–f

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Pileus 2–3.5 cm latus, parce carnosus, convexus, ad medium umbonatus, in juventute cremeo-ochraceus deinde brunneus, ad medium fuscus, siccus, estriatus, hygrophanus, aetate pallescens, sericeus. Lamellae subconfertae, adnatae, albae, immutabiles. Stipes 3–4 × 0.3–0.6 cm, cylindricus, haud bulbosus, albus vel leviter brunneus, politus. Caro parce conspicua, alba, immutabilis. Odor gravis, malus; sapor non notatus. Sporae 4.5–6.7 × 3.2–4.5 µm, late ellipsoideae vel ellipsoideae, obtusae, leves. Basidia 25–35 × 7–8.5 µm, tetraspora. Cellulae marginales nullae vel inconspicuae. Pilei cutis ex hyphis iacentibus, radialibus, 3–10 µm latis efformata. Fibulae numerosae.

***HOLOTYPUS**: Hispania, Insulae Canariae, in insula La Palma dicta, ad locum dictum Cumbre Vieja, 12.XII.2009, leg. R.M. Dähncke (WU 30642).*

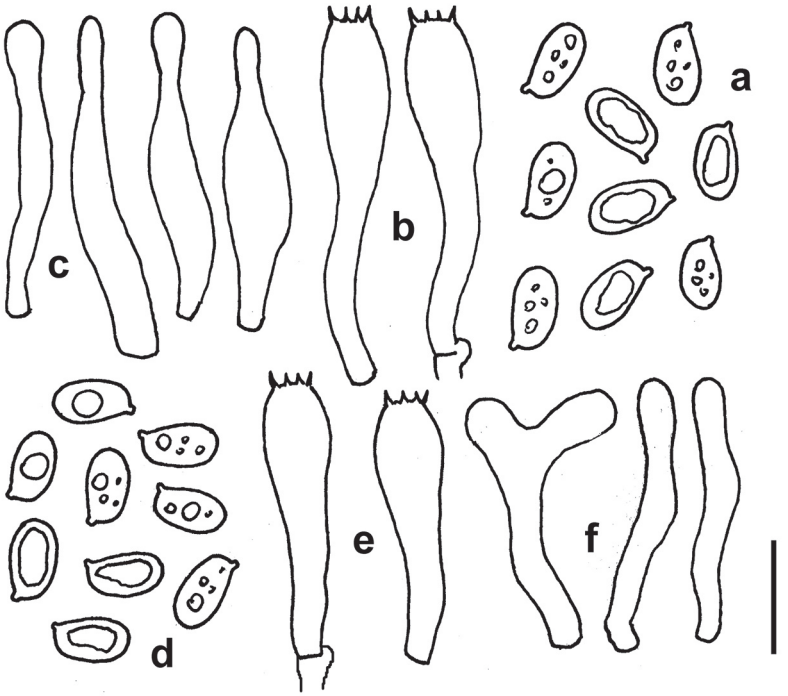

Figure 2. Basidiomes. Microscopical features. *Lyophyllum fuscobrunneum* (from the holotypus). a. Spores. b. Basidia. c. Marginal cells. *L. impudicum* (from the holotypus). d. Spores. e. Basidia. f. Marginal cells. Scale bar = 10 µm

Etymology. The specific epithet, derived from the Latin adjective *impudicus* (= indecent, shameless, stinking, disgusting), means an evil-smelling, stinking species.

Pileus 2–3.5 cm wide, not fleshy, not cartilaginous, at first broadly convex to convex-paraboloid, then convex but never expanding, with a small and rounded central umbo, dry, in young basidiomes pale ochre-cream then light brown with a darker, fuscous centre, hygrophanous and fading with age. Lamellae moderately close to close, adnate to adnate-emarginate, thin, white, not staining when bruised. Stipe 3–4 × 0.3–0.6 cm, subequal, white, brownish in old basidiomes, surface polished. Context thin, white, unchanging; smell unpleasant, disgusting; taste not recorded. Spore print white.

Spores 4.5–6.7 × 3.2–4.5 µm, on average 6.15 × 4.27 µm, hyaline, cyanophilous, carminophilous, broadly ellipsoid to ellipsoid with an obtuse to slightly tapered apex, with a single, central, ellipsoid oil-drop, smooth, thin-walled, very slightly thick-walled only when old (Fig. 2d). Basidia 25–35 × 7–8.5 µm, clavate, four-spored, with basal clamp-connection (Fig. 2e); subhymenium

made up of elongate to inflate, hyaline elements. Hymenophoral trama regular, composed of thin, hyaline hyphae. Marginal cells (cheilocystidia) inconspicuous, cylindric-flexuose to subfusiform (Fig. 2f). Pileipellis a compact undifferentiated cutis of repent, cylindric, smooth hyphae, 3–10 µm wide, with dominant parietal pigment; subpellis scarcely differentiated; suprapellis not or very scarcely gelatinized. Stipitipellis a cutis of elongate hyphae. Clamp connections present at all septa. Thromboplerous hyphae not seen.

Habitat. Under *Cistus symphytifolius*, in small groups. Autumn.

Comments. *L. impudicum* is well circumscribed on the basis of the pale cream-ochraceous turning brown and umbonate pileus, the unchanging context with an unpleasant smell, and small, ellipsoid spores on four-spored basidia. There are no similar species in the literature since all the non-staining and non-caespitose species thus far known have globose to subglobose spores.

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Literature cited

Baroni TJ. 1981. The genus *Rhodocybe* Maire (*Agaricales*). Beihefte zur Nova Hedwigia 67: 1–194.

Bon M. 1999. Flore Mycologique d'Europe. Les Collybio-marasmioïdes et ressemblants. Doc Mycol Mémoire hors-série n. 5. Amiens. 171 pp.

Clémençon H. 1982. Types studies and typifications in *Lyophyllum* (*Agaricales*). I. Staining species. Mycotaxon 15: 67–94.

Clémençon H. 1986. Schwärzende *Lyophyllum*-Arten Europas. Zeitschr für Mykol 52 (1): 61–84.

Clémençon H, Smith AH. 1983. New species of *Lyophyllum* (*Agaricales*) from North America and a key to the known staining species. Mycotaxon 17: 379–437.

Consiglio G, Contu M. 2002. Il genere *Lyophyllum* P. Karst. emend. Kühner, in Italia. Riv Micol 45(2): 99–181.

Dähncke RM, Contu M, Vizzini A. 2009. Some rare, critical, interesting taxa of the genus *Lyophyllum* s.l. (*Basidiomycota, Agaricomycetes*) from La Palma (Canary Islands, Spain). Österr Z Pilzk 18: 129–139.

Dähncke RM, Contu M, Vizzini A. 2010. New taxa in the genus *Lyophyllum* s.l. from La Palma (Canary Islands, Spain). Mycotaxon 111: 323–330. doi:10.5248/111.323

Hofstetter V, Clémençon H, Vilgalys R, Moncalvo J-M. 2002. Phylogenetic analyses of the *Lyophylleae (Agaricales, Basidiomycota)* based on nuclear and mitochondrial rDNA sequences. Mycol Res 106: 104–1059. doi:10.1017/S095375620200641X

Kalamees K. 2004. Palearctic *Lyophyllaceae* (*Tricholomataceae*) in Northern and Eastern Europe and Asia. Scripta Mycol 18: 3–134.

Ludwig E. 2001. Pilzkompendium, Bd.1 Beschreibungen: Die kleineren Gattungen der Makromyzeten mit lamelligem Hymenophor aus den Ordnungen *Agaricales, Boletales* und *Polyporales*. Eching.

Thiers B. 2010. [continuously updated] Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. http://sweetgum.nybg.org/ih/

Vizzini A, Contu M. 2010. *Lyophyllum rosae-mariae* sp. nov. (*Basidiomycota*, *Agaricomycetes*) from La Palma (Canary Islands, Spain). Mycosphere 1(1): 83–86.